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EXAMINER	
EMPIE, NATHAN H	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/580,891	Applicant(s) ALBRECHT ET AL.	
	Examiner NATHAN H. EMPIE	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _27 January 2010_.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _15-31_ is/are pending in the application.

4a) Of the above claim(s) _30 and 31_ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _15-29_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _5/26/06_.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group I (claims 15-29) in the reply filed on 1/27/10 is acknowledged. The traversal is on the ground(s) that the Office Action does not even allege that EP'377 discloses all of the features of claims 15 and 30. This is not found persuasive because a lack of unity of invention a posteriori exists in the fact that the shared features of claims 15 and 30 are found to be conventional with regard to the prior art (see, for example, the applied art rejections of the entire claim 15 limitations below). Although the examiner had not completely listed each an every limitation of claim 15 in the requirement for restriction of 12/29/09, the examiner asserts that such features are still found conventional in the art (see, for example, the applied art rejection of claim 15 below).

The requirement is still deemed proper and is therefore made FINAL.

2. Claims 30-31 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 1/27/10. Claims 15-29 are currently pending examination.

Claim Objections

3. Claim 24 is objected to because of the following informalities: Claim 24 recites the range of "…65 wt.% to 86 wt. % platinum and 35 wt.% to 15 wt.% nickel." The examiner believes that the "86 wt.%" is a typographical error for "85 wt.%" since 86 +15 would exceed 100% and since applicant's specification has additionally described the

range as "…65 wt.% to 85 wt. % platinum and 35 wt.% to 15 wt.% nickel" (pg 7 lines 28-30). Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 15 -19, 23-25, and 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over McMordie et al (US patent 5,650,235; hereafter McMordie) in view of Alperine et al (US patent 6,183,888; hereafter Alperine).

6. Claims 15, 16, 23 and 29: McMordie teaches a method of enhancing the oxidation and corrosion resistance of superalloy substrates which includes enriching the surface of the superalloy substrate with platinum and subsequently aluminizing the platinum enhanced superalloy substrate (See, for example, abstract). McMordie has taught the substrates intended to receive the protective coatings are superalloys such as nickel based and cobalt based superalloys for service in gas turbine engines (See, for example, col 1 lines 1 - 57). McMordie further teaches making available a slip material that includes at least one metal powder, the metal powder including up to at least 25 wt % of at least one metal of the platinum group formed of a metal powder alloy that includes the at least one metal of the platinum group (see, for example, preparing the platinum based coating via a slurry comprising a platinum-rich alloy powder (see, for

example, col 7 lines 21 – 28; wherein the examiner interprets "platinum rich" to be >50wt%).

7. McMordie further teaches that applying the slip material at least from area to area onto the component part while forming a slip layer (see, for example, col 7 lines 20 - 28, wherein the platinum containing coating is formed by slurry deposition onto the substrate),

8. curing an drying the slip layer and heat treating the component part that is coated with the slip material at least from area to area to diffuse the slip layer into the component part (see, for example, wherein the deposited platinum layer is taught to commonly be exposed to heat at above about 1000^{o}C for about 20 min, col 7 lines 17 – 28, wherein the examiner asserts that the temperature and times involved in this heat treatment process would be sufficient to cure and dry the slip layer).

9. McMordie has not explicitly taught incorporating a binder into the platinum rich alloy coating slurry, but McMordie has taught binders as conventional components of slurries with regard to other coating systems, and has even provided a number of preferred binder species to be used due to their beneficial properties (see, for example, col 7 line 29 - 40, and col 8 lines 28 - 59). Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to have incorporated a binder into the platinum rich alloy coating slurry of McMordie since binders are common rheology and strength altering additives in slurry systems and they are well recognized to be included into slurry coatings by McMordie.

10. McMordie has taught nickel based superalloy substrates (see, for example, abstract) and has broadly taught the metal powder as a platinum-rich alloy (see, for example, col 7 lines 22-28), but is silent as to the other alloying element(s) involved in the platinum-rich alloy. So McMordie does not explicitly teach the metal powder alloy that further includes at least one material having the same base metal as the metal-based alloy. When a primary reference is silent as to a certain detail, one of ordinary skill would be motivated to consult a secondary reference which satisfies the deficiencies of the primary reference. Alperine teaches a method for improving the oxidation and corrosion resistance for superalloy substrates used in high temperature turbine applications (see, for example, abstract, col 1 lines 1 – 37); which involves enriching the surface of the superalloy substrate with platinum, via a platinum alloy, and aluminizing the platinum enhanced superalloy substrate (see, for example, col 4 lines 30 – 63, and col 5 lines 1 – 10). Alperine teaches wherein the platinum group alloy for achieving platinum enhancement is predictably a platinum group - nickel alloy (such as palladium-nickel alloy) (see, for example, col 6 lines 64 - 67) or can be achieved by alloying a platinum group metal with an MCrAlY alloy (see, for example, col 7 line 57 - col 8 line 13; wherein M is the base metal such as Ni, Co, or Fe). Alperine further teaches wherein platinum group metal, palladium is known in the art to similarly reap the benefits achieved by platinum with respect to high temperature oxidation and corrosion resistance (see, for example, col 2 lines 38 – 40). As both McMordie and Alperine have taught methods of enhancing the oxidation and corrosion resistance of superalloy substrates which includes enriching the surface of the superalloy substrate

with platinum and aluminizing the platinum enhanced superalloy substrate, it would have been obvious to one of ordinary skill in the art at the time of invention to have incorporated platinum group-nickel alloys (such as Pt-Ni or Pd-Ni) or platinum group – MCrAlY alloys (wherein M is Ni, Co, or Fe) as such platinum rich alloys would achieve the predictable result of enhancing the substrate with a platinum group element to enhance oxidation and corrosion resistance.

11. Claim 17: McMordie in view of Alperine have taught the method of claim 15 (above) wherein the metal powder is taught as the "(b)" alternative (a Pt-group metal alloy with metal based element alloy), as claim 15 lists the two in the alternative only, and this dependant claim has not explicitly required the “a” alternative, then the claim as written directed to the type of cores would only further limit the "a" path, so rejections made according to the "b" path of claim 15 would satisfy the limitations of claim 17.

12. Claim 18: McMordie in view of Alperine have taught the method of claim 15, wherein a Pt-group metal is alloyed with, for example, MCrAlY, wherein M is Ni (see, rejection above). McMordie has further taught wherein the metal based alloy includes a nickel-based alloy (see, for example, col 1 lines 48 - 55). With regard to the limitations of the jacketing powder, the examiner has rejected the parent claim (claim 15) along the “(b)" path which does not require jacketing as claim 15 lists the two (a and b) in the alternative only, and this dependant claim has not explicitly required the metal powder to be the “a” alternative, then the claim as written would only further limit the "a" path, so rejections made according to the "b" path of claim 15 would satisfy the remaining limitation of claim 18.

13. Claim 19: McMordie in view of Alperine have taught the method of claim 15, wherein a Pt-group metal is alloyed with, for example, MCrAlY, wherein M is Co (see, rejection above). McMordie has further taught wherein the metal based alloy includes a cobalt based alloy (see, for example, col 1 lines 48 - 55). With regard to the limitations of the jacketing powder, the examiner has rejected the parent claim (claim 15) along the "(b)" path which does not require jacketing as claim 15 lists the two (a and b) in the alternative only, and this dependant claim has not explicitly required the metal powder to be the "a" alternative, then the claim as written would only further limit the "a" path, so rejections made according to the "b" path of claim 15 would satisfy the remaining limitation of claim 19.

14. Claim 24: McMordie in view of Alperine has taught the method of claim 15, wherein the metal powder is platinum rich, and as a Pt-Ni alloy powder (See, rejection of claim 15 above). As the alloy is a two component powder, and taught to be platinum rich, the examiner interprets this to mean >50% wt Pt. Further, Alperine has taught using Pt-Ni-Al alloys in molar ratios of 20-80 Pt, 0-20 Ni, and 20 to 80% Al. Although McMordie in view of Alperine do not explicitly teach wherein the metal powder is formed as a metal powder alloy having 65 wt.% to 86 wt.% platinum and 35 wt.% to 15 wt% nickel, it would have been obvious to one of ordinary skill in the art at the time of invention to have incorporated a composition within the claimed range since in the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976)

15. Claim 25: McMordie in view of Alperine teach the method of claim 15 wherein the metal powder also includes at least aluminum (the metal powder has been taught as a Pt-MCrAlY alloy which includes aluminum (Al)) (see, rejection of claim 15 above).

16. Claims 27 and 28: McMordie in view of Alperine teach the method of claim 15 (described above) wherein McMordie has taught the platinum containing layer as possessing a thickness of about 1 to 2 microns or about 3 to 5 microns thick (see, for example, col 7 lines 13 - 17, so the grain size distribution has must be below these thickness values). Further Alperine has taught that it is important to use fine grain sizes as the grain size of coating layer helps limit the roughness of the final surface texture of the coating and limits the size of the residual porosities in the final coating (see, for example, col 6 liens 10 - 17). Neither McMordie nor Alperine explicitly teach the metal powder has a grain size distribution of 0.01 to 5 micron, further 0.2 to 0.5 micron, but it would have been obvious to one of ordinary skill in the art at the time of invention to have incorporated a grain size distribution within the claim ranges since in the case where the claimed ranges “overlap or lie inside ranges disclosed by the prior art” a *prima facie* case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976), and since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

17. Claims 20, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over McMordie in view of Alperine as applied to claim 15 above, and further in view of Rafferty et al (US patent 5,997,604; hereafter Rafferty).

18. Claim 20: McMordie in view of Alperine teach the method of claim 15, wherein a Pt-group metal is alloyed with, for example, MCrAlY, wherein M is Fe (see, rejection above); wherein both McMordie and Alperine have taught methods of enhancing the oxidation and corrosion resistance of metallic superalloy substrates, such as nickel and cobalt based superalloys (see, for example, abstract and col 1 lines 47 - 57 of McMordie; abstract and col 5 lines 44 - 51 of Alperine). Neither has explicitly taught wherein the metal-based alloy includes an iron material. Rafferty teaches a method of enhancing the corrosion resistance of metallic alloy and superalloy substrates, including iron-based (stainless steel) and nickel and cobalt based superalloys for high temperature jet engine applications (see, for example, abstract, col 1 lines 1 – 10, and col 2 lines 8 – 20). Rafferty further teaches that all of these types of alloys are frequently coated with corrosion resistance materials (See, for example, col 1 lines 1 - 9). As both Rafferty and McMordie in view of Alperine have taught corrosion resistant coatings designed to protect metal alloys being used in high temperature engine applications, it would have been obvious to one of ordinary skill in the art at the time of invention to have applied the protective coating of McMordie and Alperine onto an iron-containing metal since Rafferty has taught that iron based metals are known to be used in the same applications, and are frequently coated with similar protective coatings to enhance their high temperature performance. With regard to the limitations of the

jacketing powder, the examiner has rejected the parent claim (claim 15) along the “(b)" path which does not require jacketing as claim 15 lists the two (a and b) in the alternative only, and this dependant claim has not explicitly required the metal powder to be the “a” alternative, then the claim as written would only further limit the "a" path, so rejections made according to the "b" path of claim 15 would satisfy the remaining limitations of claim 20.

19. Claim 26: McMordie in view of Alperine teach the method of claim 15 (described above) wherein both McMordie and Alperine have taught methods of enhancing the oxidation and corrosion resistance of metallic superalloy substrates, comprising applying coatings comprising platinum, base metal-alloys, and aluminum to form protective barrier coatings (see, for example, abstracts of McMordie and Alperine). Alperine has further taught introducing the MCrAlY alloy separately (at distinct time periods) or together (as alloyed) with a platinum alloy (see, for example, col 4 line 30 – col 5 line 10, and col 7 lines 55 – 67), but either has explicitly taught wherein the slip comprising the binder and the metal powder further includes an MCrAlY powder. Rafferty teaches a method of enhancing the corrosion resistance of metallic alloy and superalloy substrates for high temperature jet engine applications (see, for example, abstract, col 1 lines 1 – 10, and col 2 lines 8 – 20). The method of Rafferty similarly employs using platinum alloys alone or mixed with MCrAlY powders to form the protective coatings (see, for example, col 2 lines 35 – 48, line 4 line 55 - col 5 line 7). As both Rafferty and McMordie in view of Alperine have taught corrosion resistant coatings designed to protect metal alloys being used in high temperature engine

applications, it would have been obvious to one of ordinary skill in the art at the time of invention to have incorporated the platinum group metal powder with an MCrAlY powder in the slip as the chemistries had been previously taught to be predictably used together by Alperine, and since Rafferty has further taught that a corrosion resistant coating for protecting superalloys can be predictably formed by combining the these two species as powders in a slurry.

20. Claims 15 – 19, 21-22, 25, and 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over McMordie in view of Alperine and Mackiw et al (US patent 2,853,403; hereafter Mackiw).

21. Claim 15-17, and 29: McMordie teaches a method of enhancing the oxidation and corrosion resistance of superalloy substrates which includes enriching the surface of the superalloy substrate with platinum and subsequently aluminizing the platinum enhanced superalloy substrate (See, for example, abstract). McMordie has taught the substrates intended to receive the protective coatings are superalloys such as nickel based and cobalt based superalloys for service in gas turbine engines (See, for example, col 1 lines 1 - 57). McMordie further teaches making available a slip material that includes at least one metal powder, the metal powder including up to at least 25 wt % of at least one metal of the platinum group formed of a metal powder alloy that includes the at least one metal of the platinum group (see, for example, preparing the platinum based coating via a slurry comprising a platinum-rich alloy powder (see, for

example, col 7 lines 21 – 28; wherein the examiner interprets "platinum rich" to be >50%).

22. McMordie further teaches that applying the slip material at least from area to area onto the component part while forming a slip layer (see, for example, col 7 lines 20 - 28, wherein the platinum containing coating is formed by slurry deposition onto the substrate),

23. curing an drying the slip layer and heat treating the component part that is coated with the slip material at least from area to area to diffuse the slip layer into the component part (see, for example, wherein the deposited platinum layer is taught to commonly be exposed to heat at above about 1000°C for about 20 min, col 7 lines 17 – 28, wherein the examiner asserts that the temperature and times involved in this heat treatment process would be sufficient to cure and dry the slip layer).

24. McMordie has not explicitly taught incorporating a binder into the platinum rich alloy coating slurry, but McMordie has taught binders as conventional components of slurries with regard to other coating systems, and has even provided a number of preferred binder species to be used due to their beneficial properties (see, for example, col 7 line 29 - 40, and col 8 lines 28 - 59). Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to have incorporated a binder into the platinum rich alloy coating slurry of McMordie since binders are common rheology and strength altering additives in slurry systems and they are well recognized to be included into slurry coatings by McMordie.

25. McMordie has taught nickel based superalloy substrates (see, for example, abstract) and has broadly taught the metal powder as a platinum-rich alloy (see, for example, col 7 lines 22-28), but is silent as to the other alloying element(s) involved in the platinum-rich alloy. So McMordie does not explicitly teach the metal powder alloy that further includes at least one material having the same base metal as the metal-based alloy. When a primary reference is silent as to a certain detail, one of ordinary skill would be motivated to consult a secondary reference which satisfies the deficiencies of the primary reference. Alperine teaches a method for improving the oxidation and corrosion resistance for superalloy substrates used in high temperature turbine applications (see, for example, abstract, col 1 lines 1 – 37); which involves enriching the surface of the superalloy substrate with platinum, via a platinum alloy, and aluminizing the platinum enhanced superalloy substrate (see, for example, col 4 lines 30 – 63, and col 5 lines 1 – 10). Alperine teaches wherein the platinum group alloy for achieving platinum enhancement is predictably a platinum group - nickel alloy (such as palladium-nickel alloy) (see, for example, col 6 lines 64 - 67) or can be achieved by alloying a platinum group metal with an MCrAlY alloy (see, for example, col 7 line 57 - col 8 line 13; wherein M is the base metal such as Ni, Co, or Fe, and the platinum group is between 2 and 60% by weight). Alperine further teaches wherein platinum group metal, palladium is known in the art to similarly reap the benefits achieved by platinum with respect to high temperature oxidation and corrosion resistance (see, for example, col 2 lines 38 – 40). As both McMordie and Alperine have taught methods of enhancing the oxidation and corrosion resistance of superalloy substrates which includes enriching

the surface of the superalloy substrate with platinum and aluminizing the platinum enhanced superalloy substrate, it would have been obvious to one of ordinary skill in the art at the time of invention to have incorporated platinum group-nickel alloys or platinum group – MCrAlY alloys as such platinum rich alloys would achieve the predictable result of enhancing the substrate with a platinum group element to enhance oxidation and corrosion resistance. Alperine further teaches that the addition of platinum group metal alloys can be achieved in various ways by any known means in the powder metallurgy art, such as they can be achieved via alloys comprising core metal alloys coated with an outer metal alloy to form a core-jacketed alloy (See, for example, col 7 line 60 - col 8 line 14). Alperine has only explicitly taught an MCrAlY (wherein M corresponds to base metals such as Co or Ni, pg 5 col 60-61) core with a platinum group metal coating, so McMordie in view of Alperine does not explicitly teach platinum group-metal core with a jacketing formed of a material having a same base metal as the metal based-alloy. Mackiw teaches a method of forming core-jacketed metal alloy powders (see, for example, col 1 lines 1 – 26). Mackiw further teaches that is it known in the art to jacket platinum group metal cores with metals comprising nickel or cobalt (see, for example, col 2 lines 13 – 40). As Alperine has taught that the addition of platinum group metal alloys can be achieved by any known means in the powder metallurgy art, such as core-shell alloys, and Mackiw has taught for platinum to predictably reside are a core forming metal in core-shell alloys, it would have been obvious to one of ordinary skill in the art at the time of invention to have formed pt-group metal cores jacketed by a material having a same base metal as the metal-based alloy (such as Ni or Co alone or within the

MCrAlY alloy) as such means would provide an art recognized and predictable means to supply the addition of one or more platinum group - alloyed metals.

26. Claims 18-19: McMordie in view of Alperine and Mackiw have taught the method of claim 15 above wherein the metal based alloy includes a nickel-based or cobalt based alloys, and the jacketing is Ni or Co alone, or within the MCrAlY alloy (See rejection of claim 15 above).

27. Claims 21 and 22: McMordie in view of Alperine and Mackiw has taught the method of claim 15, wherein the metal powder is platinum rich, and as a Pt-Ni alloy powder (Pt core-Ni jacketing) (See, rejection of claim 15 above). As the alloy is a two component powder, and taught to be platinum rich, the examiner interprets this to mean >50% wt Pt. Mackiw has further taught wherein the desired ratio of the respective metals in the desired composite metal can be obtained very easily by controlling the jacketing thickness (amount of jacketing deposited) (see, for example, col 3 lines 5 – 37). Although McMordie in view of Alperine and Mackiw do not explicitly teach wherein the metal powder is formed as a metal powder alloy core having 65 wt.% to 85 wt.% platinum and a jacketing thickness generating a 35 wt.% to 15 wt% nickel, it would have been obvious to one of ordinary skill in the art at the time of invention to have incorporated a composition within the claimed range since in the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976)

28. Claim 25: McMordie in view of Alperine and Mackiw teach the method of claim 15 wherein the metal powder also includes at least aluminum (the metal powder has been

taught as a Pt-MCrAlY alloy which includes aluminum (Al)) (see, rejection of claim 15 above).

29. Claims 27 and 28: McMordie in view of Alperine and Mackiw teach the method of claim 15 (described above) wherein McMordie has taught the platinum containing layer as possessing a thickness of about 1 to 2 microns or about 3 to 5 microns thick (see, for example, col 7 lines 13 - 17, so the grain size distribution has must be below these thickness values). Further Alperine has taught that it is important to use fine grain sizes as the grain size of coating layer helps limit the roughness of the final surface texture of the coating and limits the size of the residual porosities in the final coating (see, for example, col 6 liens 10 - 17). None of McMordie, Alperine, nor Mackiw explicitly teach the metal powder has a grain size distribution of 0.01 to 5 micron, further 0.2 to 0.5 micron, but it would have been obvious to one of ordinary skill in the art at the time of invention to have incorporated a grain size distribution within the claim ranges since in the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976), and since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

30. Claims 20, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over McMordie in view of Alperine and Mackiw as applied to claim 15 above, and further in view of Rafferty et al (US patent 5,997,604; hereafter Rafferty).

31. Claim 20: McMordie in view of Alperine and Mackiw teach the method of claim 15, wherein a Pt-group metal is jacketed with, for example, MCrAlY, wherein M is Fe (see, rejection above); wherein both McMordie and Alperine have taught methods of enhancing the oxidation and corrosion resistance of metallic superalloy substrates, such as nickel and cobalt based superalloys (see, for example, abstract and col 1 lines 47 - 57 of McMordie; abstract and col 5 lines 44 - 51 of Alperine). None of McMordie, Alperine, or Mackiw has explicitly taught wherein the metal-based alloy includes an iron material. Rafferty teaches a method of enhancing the corrosion resistance of metallic alloy and superalloy substrates, including iron-containing (stainless steel) and nickel and cobalt based superalloys for high temperature jet engine applications (see, for example, abstract, col 1 lines 1 – 10, and col 2 lines 8 – 20). Rafferty further teaches that all of these types of alloys are frequently coated with corrosion resistance materials (See, for example, col 1 lines 1 - 9). As both Rafferty and McMordie in view of Alperine and Mackiw have taught corrosion resistant coatings designed to protect metal alloys being used in high temperature engine applications, it would have been obvious to one of ordinary skill in the art at the time of invention to have applied the protective coating of McMordie and Alperine and Mackiw onto an iron-based metal since Rafferty has taught that iron based metals are known to be used in the same applications, and are frequently coated with similar protective coatings to enhance their high temperature

performance. McMordie in view of Alperine, Mackiw, and Rafferty have taught the method of claim 15 above wherein the metal based alloy includes a iron based alloys, and the jacketing has been taught as an MCrAlY alloy (where M is taught as Fe) (See rejection of claim 15 above).

32. Claim 26: McMordie in view of Alperine and Mackiw teach the method of claim 15 (described above) wherein both McMordie and Alperine have taught methods of enhancing the oxidation and corrosion resistance of metallic superalloy substrates, comprising applying coatings comprising platinum, base metal-alloys, and aluminum to form protective barrier coatings (see, for example, abstracts of McMordie and Alperine). Alperine has further taught introducing the MCrAlY alloy separately (at distinct time periods) or together (as alloyed) with a platinum alloy (see, for example, col 4 line 30 – col 5 line 10, and col 7 lines 55 – 67), but either has explicitly taught wherein the slip comprising the binder and the metal powder further includes an MCrAlY powder. Rafferty teaches a method of enhancing the corrosion resistance of metallic alloy and superalloy substrates for high temperature jet engine applications (see, for example, abstract, col 1 lines 1 – 10, and col 2 lines 8 – 20). The method of Rafferty similarly employs using platinum alloys alone or mixed with MCrAlY powders to form the protective coatings (see, for example, col 2 lines 35 – 48, line 4 line 55 - col 5 line 7). As both Rafferty and McMordie in view of Alperine and Mackiw have taught corrosion resistant coatings designed to protect metal alloys being used in high temperature engine applications, it would have been obvious to one of ordinary skill in the art at the time of invention to have incorporated the platinum group metal powder with an MCrAlY

powder in the slip as the chemistries had been previously taught to be predictably used together by Alperine, and since Rafferty has further taught that a corrosion resistant coating for protecting superalloys can be predictably formed by combining the these two species as powders in a slurry.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NATHAN H. EMPIE whose telephone number is (571)270-1886. The examiner can normally be reached on M-F, 7:00- 4:30 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland can be reached on (571) 272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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